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ABSTRACT

This is the final paper in a series of three on SYS IV, a computer-based management system developed by the PLATO Curriculum Project (PCP) which tests students, routes students to lessons, stores detailed records of online student activity, and keeps summary records of student activities. An introduction describes how the system simultaneously addresses the needs of students, classroom teachers, and school administrators. The remainder of the paper explicates how implementation is carried out to tailor the system to a project, which may serve a broad population range. Considerations important at the preliminary stage that are listed include the characteristics of the student population, the educational environment, and the catalog structure. Under project staff training, the discussion includes both initial and follow-up training procedures. The importance of site visits in maintaining a project is emphasized, while final considerations center on the "user transparency" of the system. Appendices include programs for signing on as an instructor, adding a student to a group, and a sample agenda for a SYS IV training workshop. (LMM)

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THE PCP SYS IV MANAGEMENT SYSTEM: IMPLEMENTATION AND TRAINING OVERVIEW

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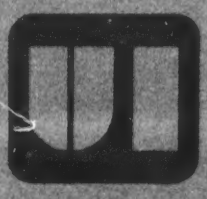

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This paper is the last in a series on SYS IV. In the other two papers, Martin A. Siegel and Dennis M. Davis present an educational overview, and John T. Bryan and J. Michael Felty present a technical overview.

THE PCP SYS IV MANAGEMENT SYSTEM: IMPLEMENTATION AND TRAINING OVERVIEW

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The SYS IV computer-based management system, developed by the PLATO Curriculum Project (PCP), tests students, routes students to lessons, stores detailed records of on-line student activity, and keeps summary records of student activities. Since the system is part of the larger CERL PLATO system, the various types of on-line communications that PLATO offers also are available through SYS IV. In short, the system addresses, simultaneously, the needs of students, classroom teachers, and school administrators.

For the student, SYS IV provides a private, highly individualized, and easy to use means of instruction. The student, at any time, may access his records to check his progress through the curriculum. A student notesfile is associated with each SYS IV group, which allows a student to communicate privately with his or her teacher in order to ask questions, make comments about a lesson, or request help.

For the classroom teacher, SYS IV provides a testing and lesson structure that greatly simplifies daily lesson planning and classroom management. The teacher, then, can spend his energies making the decisions and doing the teaching that the computer cannot. Many routine recordkeeping chores are automatic, so that daily student progress is easy to monitor. It is also possible to obtain both on-line and printout summary data on student activities. Several communication options are also available to the classroom teacher, making it possible to contact not only the students in that group, but other teachers using SYS IV, as well as the implementation staff. This wide range of communication means that on-site problems and questions are addressed promptly.

For the school administrator, SYS IV provides a flexible curriculum package that is easy to use for both teachers and students. The data needed to make decisions about scheduling and curriculum changes is readily available on-line and in printout form. In situations in which communications security for student users is necessary, the administrator is assured that SYS IV provides restricted student communication options. An important factor in any implementation situation is security of records. The records in each section of each group are protected by codewords and by restriction to certain types of users.

SYS IV is a flexible, easy to use management system. Whether the user is manipulating records, advancing through lessons, or checking student progress, the system is "user friendly," in the best sense of the term. This is by no means accidental. First, the system has been carefully designed. All possible key presses are clearly labeled and mnemonic. Second, the system is carefully implemented. Care is taken to tailor the system to a project, rather than to tailor a project to the system. In the remainder of this paper, we shall explicate how this implementation is carried out.

Assessing the Scope of the Project

SYS IV may be utilized by a wide variety of projects or institutions. Presently, we serve a broad population range: adult correctional facilities, public schools, a children's school in a mental health center, adult continuing education, community colleges, and the Job Corps. Each group of users has widely varying needs, which SYS IV is able to accommodate on a group-by-group basis. In order to implement the system efficiently and effectively, our staff must spend time with the administrative and teaching staffs of the proposed new group--asking questions, discussing special needs, and making preliminary decisions about the day-to-day functioning of the system. Some important considerations at this preliminary stage are:

Characteristics of the Student Population

How old is the student population?

What is the functional grade level of the population?

What educational objectives are students expected to achieve?

In the adult correctional facilities we serve, SYS IV is used in the pre-GED classes. The students in these classes typically range in age from early to middle twenties, although it is possible to find students in these classes who are in their thirties, forties, or even fifties. Entry and exit from the pre-GED class are based on the Test of Adult Basic Education (TABE); consequently, these classes focus on teaching the skills necessary to pass the TABE and enter the GED class. The students in the pre-GED classes are expected to function on at least a fifth grade level (these facilities use our standard curriculum package in reading, math, and language which assumes a fifth grade entry level); the average functional grade for these students is seventh grade.

By contrast, the chidren served in the mental health center are middle school age (10 to 12) and exhibit severe emotional and behavioral problems. The children are grouped more on the basis of age than grade level (these classes are very small, so individual needs are addressed). These students function at a fifth grade level or slightly below.

Characteristics of the Educational Environment

How many students will be served?

How many terminals will be available?

How long is the class period? Is it flexible?

How many instructors will be involved?

Will teacher aides be used?

Will PLATO instruction be mainline or supplemental?

Will students be assigned on a semester basis? Six weeks? Month by month? Other?

The average corrections classroom has eight PLATO terminals. There are 16 students in each class; while one group of eight works at the terminals, the other group works on off-line materials, receives individual help from the teacher, or receives some small group instruction. The classes are two and a half to three hours long, which means that it is possible to serve up to 32 students each day (more, of course, if an evening class is scheduled). Each class is run by one teacher with the help of an inmate instructor aide. These aides are used to help with routine recordkeeping (both on-line and off-line) and to provide some individual help to the students. PLATO/SYS IV is used as the primary instructional resource in these classes. In math and reading there are coordinated off-line materials to supplement the on-line instruction; such materials are under development for language. The average student spends three months in the pre-GED class, although some students may spend as little as six weeks or as long as nine months--basically, the students remain in the class for as long as is necessary to enable them to pass the TABE. Because these are correctional facilities, teachers must face the problem of sudden student transfers to other facilities. If a student is transferred to a facility with a PLATO classroom, his SYS IV records can also be transferred; in short, he can pick up where he left off.

The public school classes have from two to four terminals. Class periods are 45 to 50 minutes in length. There is one teacher per class, and teacher aides are not used. In these classes PLATO instruction is supplemental. In some cases, students are assigned to the class on a semester basis; in other cases, just for the length of a grading period.

Structure of the Catalog

Will our standard lessons and curricula be used, or will special assignments be needed?

If special assignments are needed, what kind? Which lessons? What order? Will lessons be indexed or sequenced? Will review be allowed?

Will pretests and posttests be used? If so, for the total curriculum or simply for part of it?

We provide each group with a tailor-made catalog. SYS IV may be used with almost any set of PLATO lessons and/or curricula. The PLATO Curriculum Project (PCP) and the PLATO Education Group (PEG) have developed curricula in reading, math, and language. In each of these areas, both pretests and posttests are included along with lessons. Figures 1 to 5 show portions of the catalogs created for two of our groups.

Insert Figures 1-5 about here

During this period of needs assessment, the implementation staff sets up the initial training program for the proposed group and (in consultation with the group staff) chooses the options that will be most useful for the group.

Training the Project Staff

Initial Training

SYS IV is so simple to use that novices may begin using it with very little training. Initially, training is geared toward learning the options needed to get started. A teacher may operate the system simply by knowing how to sign-on, add students, delete students, and make assignments. Training in how to write notes and use TERM-talk is also important at this point, since these forms of communication will most often be used to ask questions, report problems, learn about new features, and so forth. These "minimal" operations may be learned on-site and should require no more than a couple of hours for a PLATO-naive user.

We prefer, however, to do the training at our lab, the Computer-based Education Research Laboratory (CERL). Typically, we try to schedule two days of training. We spend the first half day in lecture and discussion; this is designed to provide a general orientation to PLATO and to the SYS IV structure. Important features are shown on overheads of screen displays. Each teacher's training manual contains duplicates of the screen displays. During the second half of the day, the teachers practice signing-on, adding and deleting students, making and deleting

assignments, and using several of the other options available to instructors. Before practicing on their own, we lead the teachers through these procedures. Then we suggest they practice using the exercises found in their training manuals. These exercises are designed to help the teachers learn the various ways in which the options may be used. (See Appendix A for two sample exercises.)

The teachers also are required to use SYS IV as students. In doing so, they become familiar with the procedures that students must follow and with the internal structure of the lessons and tests. While they use the system as students, we encourage them to pass and fail tests, to make errors in the lessons, to try wrong key presses--in short, to duplicate as much student behavior as possible. At this point, the teachers begin to make decisions about how they will train their students to use the system. Our implementation staff is present during this practice session to answer questions and to provide encouragement.

On the second day of training, we provide teachers with more supervised, hands-on experience and give them additional information about some of the notesfiles and TERM options (such as TERM-comment, TERM-spell, TERM-calc, etc.). We also spend some time on this day with the hardware maintenance staff to acquaint the teachers with procedures for filing repair reports and routine maintenance tasks they may need to perform. At this point, the teachers work on definite class schedules, set up student rosters, make student assignments, and plan to train their students to use the system. Our implementation staff is, of course, present to provide help, answer questions, and make suggestions.

All in all, a substantial portion of the initial training is used for the teachers to simply practice using PLATO and SYS IV. It is important for them to learn that they can, indeed, find their way around in the system without having to remember each and every key press. First, the training manual contains an explanation of all the procedures they will be using. Second, key presses are clearly displayed on the terminal screen at every point in the management system. Basically, during training the teachers need to be encouraged and to be convinced that they need not be afraid of the system, that they can operate it, and that making mistakes does not "destroy" the system. (See Appendix B for a typical agenda.)

Follow-up Training

Follow-up training is conducted at the group site, in order for the implementation staff to meet other teachers at the site; to meet, and possibly train, the SYS IV classroom aide; to provide additional training on some less commonly used options; and to answer the questions that inevitably arise once the system begins at a new site.

An important function of this follow-up visit is to let the site personnel know that they will continue to receive both service and educational support from the SYS IV staff. In addition, the implementation staff gains a clearer picture of the site operation.

Maintaining a Project

The service and educational support do not end with the follow-up visit. Site visits continue to be a vital part of a successful program implementation. The frequency of site visits is determined in large part by the desires and needs of the particular site. Ideally, the time between site visits should increase as the site becomes more and more self-sufficient. It is never the case, however, that a site is left to simply fend for itself; p-notes, notefiles, TERM-talk, and monitoring enable our staff to address site needs quickly without actually traveling to the site.

We have found it useful to assign each site a specific liaison (a "site manager"), in order to centralize communication and avoid duplication of efforts. Using site managers also makes long distance implementation more personal.

Maintaining contact with sites also means that as a site's needs change, SYS IV can be modified to meet those needs. Recently, at one of our adult correctional facilities, the vocational education instructor asked us to add some electronics lessons. We were able to add an index of these lessons to that site's catalog without interruption of service to the site.

In addition, when the system is updated generally, a communication structure is in place that allows the implementation staff to inform the sites of the changes with relative ease. When some new print options were added to the system, we announced the addition in the SYS IV general notesfile and provided some directions for using the new option. Then, as site managers made site visits, the teachers and administrators received further instruction and were able to ask specific questions.

Final Considerations

Internally, a management system may be a work of art--efficient, effective, and elegant. It may be a programmer's dream, or the apple of a designer's eye. But how does that same system look to the user--the user who, in many cases, is computer-naive; the user who with minimal effort wants the thing to work; the user who is not entirely sure he trusts this new-fangled machine anyway? How does it look to a 27-year-old who reads on a fifth grade level, to a teacher who was trained 15 years ago, to an administrator who has little time and less energy to worry about yet another problem?

A typical implementation of SYS IV addresses simultaneously the needs of three essentially different types of users: students, classroom teachers, and school administrators. In each case, the user has a different view of the system, a view precipitated by his or her individualized needs. Students receive testing and lessons according to individual learning needs. Teachers receive help in managing and planning instruction according to classroom needs. Administrators receive information according to "report-making" needs.

Basically, SYS IV is a flexible system that epitomizes the best of what is meant by the term "user friendly." Students, teachers, and administrators each receive individualized treatment. In addition, the system is so flexible that modifications can be implemented as the needs of these groups change. Yet, the system, as well as a good part of its maintenance, remains transparent to the user.

Appendix A: Sample Exercises

Exercise A - Signing on as an Instructor

Sign on the PLATO system:

* Enter your PLATO instructor name, then press NEXT

* Enter your group name, then press SHIFT-STOP.

* Enter your password, then press NEXT

You should now see your INSTRUCTOR INDEX. Sign off the system by pressing SHIFT-STOP. Repeat the sign-on procedure until you feel comfortable doing it.

Now try signing on using an incorrect group name. Note the feedback. Correct the mistake and proceed to the index page, then sign off.

Now sign on with the wrong PLATO instructor name but the correct group name. Note the feedback.

Now sign on using an incorrect password. Note the feedback.

Exercise 8 - Adding a Student to Your Group

Sign on to the system.

Choose option "r" on the INSTRUCTOR INDEX.

You will be sent automatically to the DIRECTOR OPTIONS PAGE. Type in the letter of your section. (See Figure 6.)

You will be sent automatically to your ROSTER PAGE. (See Figure 7.)

On the roster page, choose option "a" to add someone. Note the arrow that appears. (See Figure 8.)

Type in the person's name, then press NEXT.

After pressing NEXT, you will be given a list of user types from which to choose. (See Figure 9.) Press 1 to make this person a student.

After 1 is pressed, the following will happen:

ADDING will flash on the screen.

ADDED will flash on the screen

The student's name will appear on the screen, and directions to press NEXT or DATA will appear.

(See Figure 10.)

Press DATA to look at the student's record page. (See Figure 11.)

Press LAB to return to the roster page.

Try to add another person using the name that has already been added. Note the feedback.

Appendix B: Sample Agenda

SYS IV TRAINING WORKSHOP

Computer-based Education Research Laboratory
University of Illinois at Urbana-Champaign

March 3-4, 1982

Wednesday

8:00 - 8:30	Donuts and Coffee	
8:30 - 10:00	Overview of PLATO, CAI, and SYS IV	(Project Director)
10:00 - 10:30	Break	
10:30 - 12:00	Overview of SYS IV and curriculum options	(Project Director)
12:00 - 1:30	Lunch	(Director and Manager)
1:30 - 3:00	Signing on; manipulating student records; viewing the catalog	(Site Manager)
3:00 - 3:30	Break	
3:30 - 4:30	Working as a student	(Site Manager)
6:00 - 9:00	Dinner at Site Manager's house	

Thursday

8:00 - 8:30	Donuts and coffee	
8:30 - 9:15	Review yesterday's work; view progress data options	(Site Manager)
9:15 - 9:30	Break	
9:30 - 11:30	Communications options	(Site Manager)
11:30 - 1:00	Lunch	(Staff)
1:00 - 2:00	Hardware maintenance	(Maintenance Person)
2:00 - 2:15	Break	
2:15 - 4:00	Set up rosters, make assignments	(Site Manager)
4:00 - 5:00	Review and make sure everything is ready to go	(Staff)

Topic Catalog: Ccc

Page 1 of 2

Subject Areas

A Introduction to PLATO
B PCP Reading and Math Curricula
C PCP Language
D PCP Spelling
E GED Science and Social Science
F Spelling
G English Grammar and Usage
H Reading and Vocabluary
I Addition, Counting and Place Value
J Subtraction
K Multiplication
L Division
M Whole Number Arithmetic Consolidation
N Fractions
O Decimals and Percents
P Algebra

Press a shifted letter to go to that area.
LAB - Instructor Index

NEXT - more areas

Figure 1. First page of group "CCC" catalog areas

Topic Catalog: Ccc

Page 2 of 2

Subject Areas

Q Metrics, Graphing Data, Sci. Notation
R Geometry and Other Math Topics
S Other Topics
T TABE Tests

Press a shifted letter to go to that area.
LAB - Instructor Index

BACK - previous areas

Figure 2. Second page of group "CCC" catalog areas

Topic Catalog: Ccc

Page 1 of 1

Area S: Other Topics

a U.S. and Illinois Constitutions
b Career Planning and Employability
c Spanish
d Music Lessons
e Game Index
f Holiday Greetings
g Speed Typing
h General Catalog of Lessons

Press a letter to see a topic.
Press a shifted letter to see another subject area.

SHIFT-BACK - subject areas list
LAB - Instructor Index

Figure 3. Topics available in area "Other Topics" for group "CCC"

Topic Catalog: Pti

Subject Areas

A Introduction to PLATO
B PCP Language
C Spelling
D English Grammar and Usage
E Reading Comprehension and Vocabulary
F Police Training Institute
G Miscellaneous Topics
H PTI Special Topics

Press a shifted letter to go to that area.
LAB - Instructor Index

Figure 4. Group "PTI" catalog areas

Topic Catalog: Pti

Page 1 of 1

Area H: PTI Special Topics

a Patrol -- Report Writing
b Patrol -- Report Writing
c Patrol -- Investigation
d Law
e Human Behavior
f Regional
g Regional Supervisors

Press a letter to see a topic.
Press a shifted letter to see another subject area.

SHIFT-BACK - subject areas list
LAB - Instructor Index

Figure 5. Topics available in area "PTI Special Topics"

There is room for 87 more people in this group.

Group: Training

Press the section letter:

>

BACK - Instructor Index
DATA - Select an Individual
HELP - list of sections
SHIFT-DATA - Group Options
SHIFT-BACK - Select another Group

Figure 6. Director options page

Section "c", Group "Training" Remaining Spaces: 30

Press a to add someone to the roster
d delete someone from the system
r see someone's records
n change someone's name
p change someone's password

SHIFT-DATA - section options LAB - another section

Figure 7. Section "c" roster page

```
Section "c", Group "Training"                Remaining Spaces:  30

      Press → a   to add someone to the roster
              d      delete someone from the system
              r      see someone's records
              n      change someone's name
              p      change someone's password


Enter the new person's first and last name.  Then press NEXT.
»

(Otherwise, press BACK.)

SHIFT-DATA - section options                  LAB - another section
```

Figure 8. Enter new person's name

```
Section "c", Group "Training"              Remaining Spaces:  30

      Press → a   to add someone to the roster
              d      delete someone from the system
              r      see someone's records
              n      change someone's name
              p      change someone's password


      Press the record type number this person will have:
      1)  Student (S)
      2)  Instructor Aide (IA)
      3)  Instructor (I)
```

SHIFT-BACK - Instructor Index
SHIFT-DATA - section options LAB - another section

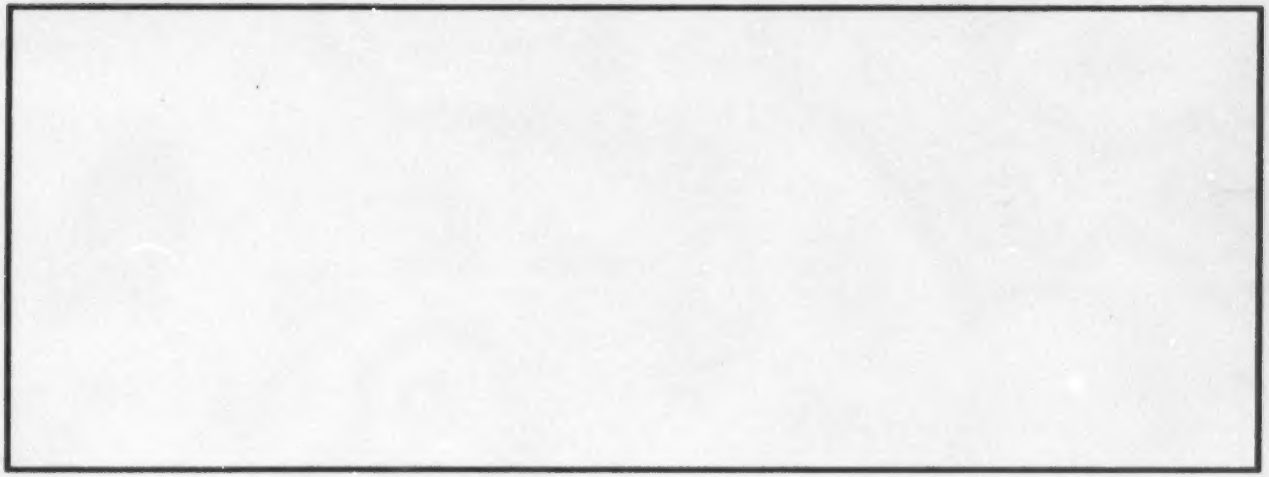
Figure 9. Choose user type

```
Section "c", Group "Training"                Remaining Spaces:  29

      Press → a   to add someone to the roster
              d      delete someone from the system
              r      see someone's records
              n      change someone's name
              p      change someone's password


    Press NEXT to add another person, or
          DATA to see jane doe's records, or
          the letter of one of the options above.

-------------------------------------------------------------------------

  1  jane doe (S)

SHIFT-BACK - Instructor Index
SHIFT-DATA - section options                    LAB - another section
```

Figure 10. New person added

Current record for student: jane doe / training / c

This student does not have a topic assignment.
Press "a" to assign instruction.



g - general info	a - assign	SHIFT-NEXT - next ⚑ record
t - topic summary	d - delete	NEXT - next record
* - single topic	o - order topics	BACK - prior record
c - copy	m - min delay	LAB - roster page
h - history	n - note	SHIFT-HELP - delete record

⚑ indicates student is waiting for an instructor action

Figure 11. New person's record page